

**From:** [REDACTED]  
**Sent:** 17 March 2018 00:16  
**To:** [REDACTED]  
**Cc:** Romkens, Paul [REDACTED]  
**Subject:** RE: Progress on simulation of Cadmium accumulation in soils

Dear [REDACTED] and Paul,  
I am very sorry for the silence lately. I wanted to greatly thank you for this statement, and for informing me!!  
Greetings, [REDACTED]

**From:** [REDACTED]  
**Sent:** 15 February 2018 13:47  
**To:** [REDACTED]@eea.europa.eu>  
**Cc:** [REDACTED]@ec.europa.eu; [REDACTED]@ec.europa.eu; Romkens, Paul <[REDACTED]>  
**Subject:** Progress on simulation of Cadmium accumulation in soils

Dear [REDACTED]

When informing you on the progress of the EEA work in the last three months of 2017 (QPR4), I indicated a delay in dynamic Cd modelling work in view of the ongoing discussions with [REDACTED] of [REDACTED] University ([REDACTED]) and the sensitivity of the results in view of policy making. At both WUR and [REDACTED] we have applied models that use Cd mass balance approach with inputs, uptake and leaching, but in our study (Römken et al) lower leaching rates are predicted and thus higher Cd accumulation rates. This is due to conceptual differences (linear Cd soil-solution model by Smolders versus a non-linear model by Römken) but also differences in the underlying methods to measure dissolved Cd (in-situ leachates by Smolders and soil extracts by Römken) and the data ranges of solid and dissolved Cd.

Meanwhile, my colleague Paul Romkens, leading this research work at WUR, came to a consensus with [REDACTED] of [REDACTED] University last week in that they like to combine both models by using one unified calibration dataset and that a new mass balance calculation will be made with one and the same model on which both scientists agree. This is shown in statement below, which was written for Fertilizers Europe, that was interested to know the ongoing progress.

*To whom it may concern: joint statement on the soil cadmium mass balance in Europe*

*The European Commission and the Parliament have proposed cadmium (Cd) limits in mineral fertilizers, transitioning from 60 (Cd-60 scenario) to 20 mg Cd/kg P2O5 (Cd-20 scenario) over a 16-year period. A recent modelling study by Römken et al. (2017), Wageningen University and Research predicted a long-term net increase in soil Cd concentration in the Cd-20 scenario for the average EU arable soils. These findings contrast earlier findings by [REDACTED] (2014) and [REDACTED] (2017, [REDACTED]) predicting a net decrease of soil Cd under the same scenario.*

*The undersigned researchers, Paul Römken and [REDACTED], are authors of these different studies. Herewith, we state that this difference in model outcome is within the uncertainties of the modelling and should, therefore, not be overemphasized in the decision making process. We convened on February 9, 2018 and compared the different models. We identified potential reasons for the difference in predictions leading to different changes in the average soil cadmium balance in Europe. That difference is related to different leaching models that, in turn, were each based on a different calibration set and data selection criteria. We agreed to combine both models by using one unified calibration dataset and that a new mass balance calculation will be made with one and the same model on which both scientists agree. We will include the model uncertainty into the mass balance calculations, thereby showing how the proposed thresholds vary with the statistical and analytical uncertainty of the leaching model.*

*We reiterate that there is no dispute between both research groups, each of us used a model that had associated uncertainties in the cadmium leaching component. These uncertainties have been highlighted in the respective studies. In the updated study, the unified model will be used and we*

*propose that the graphical or tabulated uncertainties in the model outcome can be taken into account into the final deliberation of the cadmium limits.*

This statement gives in a nutshell the current status and plans for cooperation, leading on one hand to a delay in the final paper, but on the other hand implying a clear joint effort on this topic

Best regards

[Redacted]

Wageningen University and Research; Environmental Research (Alterra) and Environmental Systems Analysis Group

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